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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			EXAMINER VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,310

Applicant(s)

KOVALSKY ET AL.

Examiner

Christopher Verdier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 22-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8-22-03, 12-23-05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau. (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Applicant's amendment dated December 23, 2005 has been carefully considered but is non-persuasive. Claims 1-14 and 22-31 are pending, with claims 22-31 being newly presented. The Replacement Sheets of Drawings filed December 23, 2005 overcome the objection to the drawings set forth in the Office action of July 12, 2005 and is acceptable to the examiner. The specification has been amended to overcome the informalities therein. However, the specification still does not contain antecedent basis for the leading edge and trailing edge conic of the spar comprising only the braided bias angle fibers. Claims 5 and 12 have been amended to overcome the informalities therein. Correction of the above matters is noted with appreciation.

With regard to the rejection of claim 12 under 35 U.S.C. 112, second paragraph, as being indefinite, applicant has argued that the claim is definite because the zero degree fibers are longitudinal to the axis and may thereby be braided into selected areas of the sleeve, as in the case along the upper and lower aerodynamic surfaces. (Page 11, paragraph two of Applicant's Remarks dated December 23, 2005). Upon review of the specification, including review of paragraph 30, lines 5-8, the zero degree fibers are located parallel to the axis P and are located on the upper and lower surfaces of the spar 32, with the 40 degree fibers braided around the zero degree fibers. Therefore, the rejection of claim 12 under 35 U.S.C. 112, second paragraph is withdrawn. However, the specification still lacks explicit antecedent basis for the specific language that the leading edge and trailing edge conic of the spar comprising only the braided bias angle fibers, as recited in claim 12.

With regard to rejection of claims 1, 3-7, 9-11, 13, and 15 under 35 U.S.C. 102(b) as being anticipated by Graff 5,222,297, Applicant has argued that Graff does not disclose a multiple of braided bias angled fibers and a multiple of zero degree fibers interwoven with the multiple of braided bias angled fibers which form a braided sleeve which surrounds a longitudinal axis, because Graff discloses only use of a dry multi layer woven fiber wrap 22 with a circumferential band that is wound about each braided layer which further substantiates that Graff uses a conventional ply structure held in place by the wound band of material, and that Graff fails to disclose or suggest any sort of braided sleeve as recited in the amended claims. These arguments are not persuasive, because Graff discloses a tri-axial braid having a multiple of braided bias angled fibers 26 and a multiple of zero degree fibers 28 interwoven with the multiple of braided bias angled fibers which form a braided sleeve 22 which surrounds an unillustrated longitudinal axis, with the braided bias angled fibers oriented non-parallel to the longitudinal axis to provide two axes of the tri-axial braid, and the zero degree fibers being substantially parallel to the longitudinal axis (abstract, lines 6-8) to provide one axis of each of the multiple of tri-axial braids. The multiple of zero degree fibers are broadly considered to be interwoven with the multiple of braided bias angled fibers, because the zero degree fibers are located between sheets of the multiple of braided bias angled fibers (see column 5, lines 33-37) and are laid-up during the braiding (column 5, lines 33-37). Note that during patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be

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interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. In re Cortright, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999). MPEP 2111. The examiner respectfully submits that the claims have been given their broadest reasonable interpretation consistent with the specification and consistent with the interpretation that those skilled in the art would reach.

With regard to the rejection of claims 1-3, 5-10, and 12-15 under 35 U.S.C. 102(b) as being anticipated by Violette 2002/0008177, Applicant has argued that Violette also uses layers of braided glass fiber material and neither discloses nor suggests the braided sleeve as recited in the amended claims. These arguments are not persuasive, because Violette discloses a tri-axial braid having a multiple of braided bias angled fibers 40, 44, 48, 52 and a multiple of zero degree fibers 42, 50 interwoven with the multiple of braided bias angled fibers which form a braided sleeve 16/20 which surrounds an unnumbered longitudinal axis, with the braided bias angled fibers oriented non-parallel to the longitudinal axis to provide two axes of the tri-axial braid, and the zero degree fibers being substantially parallel to the longitudinal axis (paragraph 23, lines 7-9) to provide one axis of each of the multiple of tri-axial braids. The multiple of zero degree fibers are broadly considered to be interwoven with the multiple of braided bias angled fibers, because the zero degree fibers are located between sheets of the multiple of braided bias angled fibers. The examiner respectfully submits that the claims have been given their broadest

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reasonable interpretation consistent with the specification and consistent with the interpretation that those skilled in the art would reach.

With regard to the rejection of claims 1, 3-7, 9-11, and 15 under 35 U.S.C. 102(b) as being anticipated by Plummer, Jr. 4,741,087, Applicant has argued that Plummer discloses sleeving that is temporary in its usage, and that warp filaments 14 which have been interpreted as the zero degree fibers stretch or rupture once the sleeving has been telescoped over the object and tension is applied thereto, noting column 4, lines 19-29 of Plummer. Applicant has further argued that the examiner's interpretation contradicts and is not consistent with the Applicant's specification in that the warp filaments 14 cannot be interpreted as zero degree fibers since Plummer specifically teaches that the filaments rupture upon installation of the sleeving material to permit the sleeving material to contract over the elongated object, and that filaments 24 (which appears should be "14") cannot be interpreted as zero degree fibers as they provide no structure whatsoever once installed and ruptured. Applicant has further argued that once ruptured, the filaments 14 cannot be considered substantially parallel to a longitudinal axis as recited in the claims. Applicant has also cited *In re Bond* and *In re Sneed*. These arguments are not persuasive, because the claims do not recite that the sleeve is permanent. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The sleeve 10 of Plummer still is structurally sound before it is installed and meets all the claim limitations as set forth below. Furthermore, column 4, lines 27-29 of Plummer states that application of

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tension serves to stretch, or rupture the weak warp filaments 14. Therefore, if the filaments 14 are stretched, they are obviously not ruptured as argued by Applicant.

Applicant's argument that the claims as amended define over You 5,700,533 is persuasive.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-14 and 22-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1, line 4 and claim 9, lines 3-4 have been amended to recite that the braided sleeve forms a non-circular cross-sectional profile. This is new matter, because the original specification does not provide support for the negative limitation of the braided sleeve forming a non-circular cross-sectional profile. Any negative limitation or exclusionary proviso must have basis in the original disclosure. The mere absence of a positive recitation is not basis for an exclusion. MPEP 2173.05(i). Applicant's figure 2 shows that the braided spar 32 is of a generally circular shape, which additionally supports that the negative limitation is new matter. Claim 8, lines 3-4 have been amended to recite that the composite sheet is located adjacent at

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least one of the upper and lower aerodynamic surfaces. Review of paragraph 31 of the specification indicates that there is no antecedent basis in the specification that the composite sheet is located adjacent at least one of the upper and lower aerodynamic surfaces, because in figure 6, it is unclear whether or not composite layers 35 are located adjacent the upper or the lower aerodynamic surfaces. Claim 25, last four lines, which recite that the upper skin at least partially surrounds the spar and the lower skin at least partially surrounds the spar, adds, new matter, because there is no antecedent basis in the original specification for the underlined terms. Claim 26, lines 2-4, which recite “a separate composite sheet interwoven ... adjacent at least one of said upper and lower aerodynamic surfaces” contains new matter for the same reason with regard to claim 8.

Claims 1-14, 22-24, and 30-31 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1, line 4 and claim 9, lines 3-4 have been amended to recite that the braided sleeve forms a non-circular cross-sectional profile. This is inaccurate, because Applicant's figure 2 shows that the braided spar 32 is of a generally circular shape. Claim 1, last two lines recite “to provide one axis of each of said multiple of tri-axial braids”. This is ambiguous, because claim 1, line 2 only recites a tri-axial braid, not multiple tri-axial braids.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-7, 9-11, 13, 22-24, 25, 28-29, and 30-31 (as far as claims 1, 3-7, 9-11, 13, 22-24, and 30-31 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Graff 5,222,297. Note the hollow composite article/composite rotor blade spar, comprising a tri-axial braid having a multiple of braided bias angled fibers 26 and a multiple of zero degree fibers 28 interwoven with the multiple of braided bias angled fibers which form a braided sleeve 22 with a non-circular cross-sectional profile which surrounds an unillustrated longitudinal axis, the braided bias angled fibers oriented non-parallel to the longitudinal axis to provide two axes of the tri-axial braid, and the zero degree fibers substantially parallel to the longitudinal axis (abstract, lines 6-8) to provide one axis of each of the multiple of tri-axial braids. Note that the multiple of zero degree fibers are broadly considered to be interwoven with the multiple of braided bias angled fibers, because the zero degree fibers are located between sheets of the multiple of braided bias angled fibers (see column 5, lines 33-37) and are laid-up during the braiding (column 5, lines 33-37). As seen in figure 1C, the braided bias angled fibers are offset approximately 45 degrees relative to the longitudinal axis. The braided bias angled fibers are braided on a mandrel and therefore form a spiral path around the longitudinal axis (column 5, lines 16-29). A leading edge and a trailing edge conic of the hollow composite article

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comprise the braided bias angle fibers. The braided bias angled fibers are oriented to accommodate a twist along the longitudinal axis, due to their angled and spiral formation. The zero degree fibers are positioned adjacent an upper and a lower aerodynamic surface 52 of the hollow composite article. (Note that "adjacent" does not require that the two elements be immediately next to one another). The multiple of zero degree fibers are maintained in tension due to tensile stresses imposed by centrifugal forces generated by blade rotation. The braided sleeve is resin impregnated. The longitudinal axis is a faying axis, since the rotor blade spar is capable of changing pitch about the longitudinal axis. The braided sleeve is formed to generally constrict toward the longitudinal axis before it cures, due to the fibers being flexible before they are cured. An upper skin (near 52) surrounds the spar to define an upper aerodynamic surface, and a lower skin (below 52) surrounds the spar to define a lower aerodynamic surface. A leading edge sheath 62 interconnects the upper skin and the lower skin forward of the spar relative to the longitudinal axis. A counterweight 42 is located between the leading edge sheath and the spar.

Claims 1-3, 5-10, 12-14, 22-26, and 30-31 (as far as claims 1-3, 5-10, 12-14, 22-24, and 30-31 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Violette 2002/0008177 (figures 1-4). Note the hollow composite article/composite rotor blade spar, comprising a tri-axial braid having a multiple of braided bias angled fibers 40, 44, 48, 52 and a multiple of zero degree fibers 42, 50 interwoven with the multiple of braided bias angled fibers which form a braided sleeve 16/20 with a non-circular cross-sectional profile which surrounds an unillustrated longitudinal axis, the braided bias angled fibers oriented non-parallel to the longitudinal axis (at an angle of 30-60 degrees to the longitudinal axis) to provide two axes

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of the tri-axial braid, and the zero degree fibers substantially parallel to the longitudinal axis (paragraph 23, lines 7-9 to provide one axis of each of the multiple of tri-axial braids. Note that the multiple of zero degree fibers are broadly considered to be interwoven with the multiple of braided bias angled fibers, because the zero degree fibers are located between sheets of the multiple of braided bias angled fibers. A leading edge and a trailing edge conic of the hollow composite article comprise the braided bias angle fibers. The braided bias angled fibers are oriented to accommodate a twist along the longitudinal axis, since the blade can be twisted (paragraph 17). The zero degree fibers are positioned adjacent an upper and a lower aerodynamic surface (both unnumbered) of the hollow composite article. (Note that "adjacent" does not require that the two elements be immediately next to one another). A separate composite sheet 46 is interwoven with the multiple of braided bias angled fibers and the multiple of zero degree fibers, because it is located between sheets of the zero degree fibers and sheets of the multiple braided bias angled fibers, with the sheet being located adjacent at least one of the upper and lower aerodynamic surfaces. (Note that "adjacent" does not require that the two elements be immediately next to one another). Note the composite rotor blade spar 12/30. The longitudinal axis is a faying axis, since the rotor blade spar can change pitch about the longitudinal axis. A leading edge and trailing edge conic of the spar comprise only the braided bias angled fibers 40. The zero degree fibers are positioned on an upper and a lower surface of the spar. The braided sleeve is formed to generally constrict toward the longitudinal axis before it cures, due to the fibers being flexible before they are cured. The multiple of zero degree fibers are maintained in tension due to tensile stresses imposed by centrifugal forces generated by blade rotation (paragraph 23). The braided sleeve is resin impregnated. An upper skin (near 64)

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surrounds the spar to define an upper aerodynamic surface, and a lower skin (near 68) surrounds the spar to define a lower aerodynamic surface.

Claims 1, 3-7, 9-11, and 22-24 (as far the claims are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Plummer, Jr. 4,741,087 (figures 1-3). Note the hollow composite article comprising a tri-axial braid having a multiple of braided bias angled fibers 12, 13 and a multiple of zero degree fibers 14 interwoven with the multiple of braided bias angled fibers which form a braided sleeve 10 with a non-circular cross-sectional profile which surrounds an unnumbered longitudinal axis, the braided bias angled fibers oriented non-parallel to the longitudinal axis to provide two axes of the tri-axial braid, and the zero degree fibers substantially parallel to the longitudinal axis to provide one axis of each of the multiple of tri-axial braids. As seen in figure 2, the braided bias angled fibers are offset approximately 45 degrees relative to the longitudinal axis. The braided bias angled fibers form a spiral path around the longitudinal axis. A leading edge and a trailing edge conic of the hollow composite article comprise the braided bias angle fibers. The braided bias angled fibers are oriented to accommodate a twist along the longitudinal axis, due to their angled and spiral formation. The zero degree fibers are positioned adjacent an upper and a lower aerodynamic surface of the hollow composite article, with the zero degree fibers maintained in tension when they are stretched (column 4, lines 27-29). The longitudinal axis is broadly considered to be a faying axis, since the hollow composite article is capable of rotating about the longitudinal axis. The recitation in claims 9-11 of "composite rotor blade spar" has not been given weight, because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight

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where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). The braided sleeve is formed to generally constrict toward the longitudinal axis, due to the fibers being flexible.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graff 5,222,297 in view of Holowczak 6,447,254. Graff discloses a rotor blade assembly substantially as claimed

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as set forth above, including an upper skin and a lower skin, both near 52, but does not disclose that the upper skin and the lower skin are formed from a multitude of prepreg composite material plies.

Holowczak (figure 1B) shows a rotor blade having an upper skin 24 and a lower skin 26, formed from a multitude of prepreg composite material plies, for the purpose of providing a lightweight rotor blade.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the rotor blade assembly of Graff such that the upper skin and the lower skin are formed from a multitude of prepreg composite material plies, as taught by Holowczak, for the purpose of providing a lightweight rotor blade.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
March 30, 2006


Christopher Verdier
Primary Examiner
Art Unit 3745